

## CLAIMS

1. A computer, comprising:

a memory; and

a data structure stored in the memory, the data structure including:

5 a definition of a first element, the definition of the first element including an element value field;

a key identifier to identify a key value field to be used as a key in a data store.

2. A computer according to claim 1, wherein:

10 the definition of the first element includes the key identifier as a property of the first element; and

the key identifier identifies the element value field as the key value field.

3. A computer according to claim 1, wherein:

15 the definition of the first element includes a definition of a first attribute of the first element, the definition of the first attribute including the key identifier; and

the key identifier identifies the element value field as the key value field.

4. A computer according to claim 1, wherein the definition of the first element

20 includes a definition of a second attribute, the definition of the second attribute including an attribute value field.

5. A computer according to claim 4, wherein:

25 the definition of the second attribute includes the key identifier as a property of the second attribute; and

the key identifier identifies the attribute value field as the key value field.

6. A computer according to claim 4, wherein:

30 the definition of the first element further includes a definition of a third attribute of the first element, the definition of the third attribute including the key identifier; and

the key identifier identifies the attribute value field of the second attribute as the key value field.

7. A computer according to claim 1, further comprising:

a second element; and  
a tree structure including the first element and the second element.

8. A computer according to claim 1, wherein the key identifier identifies the key  
5 value field as one of a primary key, a secondary key, and a foreign key for the data store.

9. A computer according to claim 8, wherein:  
the key identifier identifies the key value field as a foreign key for the data store; and  
the key identifier references a second data store.

10. A computer according to claim 1, wherein the schema is an eXtensible  
Markup Language (XML) schema.

11. A computer system, comprising:  
15 a data store to store a first document; and  
a first schema applicable to the first document, the first schema including:  
a definition of a first element, the definition of the first element including an element  
value field;  
a first key identifier to identify a first key value field in the first document to be used  
20 as a key in a data store.

12. A system according to claim 11, wherein:  
the definition of the first element includes the first key identifier as a property of the  
first element; and  
25 the first key identifier identifies an element value field of the first element as the first  
key value field.

13. A system according to claim 11, wherein:  
the definition of the first element includes a definition of a first attribute, the  
30 definition of the first attribute including the first key identifier; and  
the first key identifier identifies an element value field of the first element as the first  
key value field.

14. A system according to claim 11, wherein the definition of the first element includes a definition of a second attribute, the definition of the second attribute including an attribute value field.

5 15. A system according to claim 14, wherein:  
the definition of the second attribute includes the first key identifier as a property of the second attribute; and  
the first key identifier identifies the attribute value field as the first key value field.

10 16. A system according to claim 14, wherein:  
the definition of the first element further includes a definition of a third attribute, the definition of the third attribute including the first key identifier; and  
the first key identifier identifies the attribute value field as the first key value field.

15 17. A system according to claim 11, wherein:  
the data store is operative to store a second document; and  
the system further comprises a second schema applicable to the second document, the second schema including:  
a definition of a second element, the definition of the second element including an  
20 element value field;  
a second key identifier to identify a second key value field in the second document to be used as a key in a data store.

25 18. A system according to claim 17, wherein:  
the first schema includes a first identifier for the first key value field;  
the second schema includes a second identifier for the second key value field; and  
the first identifier and the second identifier are the same identifier.

30 19. A system according to claim 11, wherein the data store is a Lightweight Directory Access Protocol (LDAP) data store.

20. A system according to claim 11, further comprising a parser to parse the schema.

21. A system according to claim 20, further comprising:

the parser is operative to identify the first key value field in the schema; and  
a loader to load a value from the first key value field in the first document.

22. A system according to claim 21, wherein the data store further includes an index associated with the first document, the index storing a copy of the value from the first key value field in the first document. \

23. A system according to claim 22, wherein the index is in a native format of the data store.

24. A system according to claim 21, wherein:  
the schema includes a definition of at least one of a second element and a fourth attribute;

the parser is operative to identify the second element or the fourth attribute;  
the loader is operative to load a second value from the second element or the fourth attribute in the first document; and

the data store further includes a field to store the second value in a native format of the data store.

25. A system according to claim 20, wherein:  
the parser is operative to parse the schema into objects; and  
the system further comprises a definer to define a structure for the data store based on the objects.

26. A system according to claim 11, wherein:  
the first document is an eXtensible Markup Language (XML) document; and  
the first schema is an XML schema.

27. A method for adding a document to a data store in a computer, comprising:  
accessing a schema for the document;  
locating a key value field in the document defined in the schema as a key;  
loading a value from the key value field;  
storing the value in the data store; and

storing the document in the data store.

28. A method according to claim 27, further comprising indexing the document in the data store using the value.

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29. A method according to claim 27, wherein identifying a key value field includes:

locating an element defined in the schema as the key; and

selecting an element value field for the element as the key value field.

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30. A method according to claim 29, wherein locating an element includes locating the element based on a property of the element identifying the element as the key.

31. A method according to claim 29, wherein locating an element includes locating the element based on an attribute of the element identifying the element as the key.

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32. A method according to claim 27, wherein identifying a key value field includes:

locating a first attribute of an element defined in the schema as the key; and

selecting an attribute value field for the first attribute as the key value field.

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33. A method according to claim 32, wherein locating a first attribute includes locating the first attribute based on a property of the first attribute identifying the first attribute as the key.

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34. A method according to claim 32, wherein locating an attribute includes locating the first attribute based on a second attribute of the element identifying the first attribute as the key.

35. A method according to claim 27, wherein storing the document includes: parsing the document into objects according to the schema; loading values for each object in the document; and storing the values in the data store.

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36. A method according to claim 35, wherein storing the values includes storing the values in the data store in a native format of the data store.

37. A method according to claim 27, wherein:

the document is an eXtensible Markup Language (XML) document; and  
the schema is an XML schema.

38. A method for defining a data store in a computer, comprising:

accessing a schema;

locating an object defined in the schema as a key;

defining a first data structure in the data store for the object;

identifying the first data structure in the data store as a key data structure; and

defining a second data structure in the data store for a document conforming to the schema.

39. A method according to claim 38, wherein defining a first data structure includes defining the first data structure in the data store for the object in a native format of the data store.

40. A method according to claim 38, wherein defining a second data structure includes:

parsing the schema into objects; and

defining a data structure in the data store for each object.

41. A method according to claim 40, wherein defining a data structure in the data store for each object includes defining the data structure in the data store for each object in a native format of the data store.

42. A method according to claim 38, wherein:

the document is an eXtensible Markup Language (XML) document; and  
the schema is an XML schema.

43. A method for defining a schema in a computer, comprising:

defining a first element in the schema, the first element including an element value field; and

identifying a key value field in the schema to be used as a key in a data store.

5           44.     A method according to claim 43, wherein:  
defining a first element includes assigning a property to the first element as the key;  
and  
identifying a key value field includes identifying the element value field as the key  
value field.

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          45.     A method according to claim 43, wherein:  
defining a first element includes defining a first attribute of the first element, the first  
attribute identifying the first element as the key; and  
identifying a key value field includes identifying the element value field as the key  
15 value field.

15

          46.     A method according to claim 43, wherein defining a first element includes  
defining a second attribute for the first element, the second attribute including an attribute  
value field.

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          47.     A method according to claim 46, wherein:  
defining a second attribute includes assigning a property to the second attribute as the  
key; and  
identifying a key value field includes identifying the attribute value field as the key  
25 value field.

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          48.     A method according to claim 46, wherein:  
defining a second attribute includes defining a third attribute of the first element, the  
third attribute identifying the second attribute as the key; and  
30 identifying a key value field includes identifying the attribute value field of the  
second attribute as the key value field.

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          49.     A method according to claim 43, wherein the schema is an XML schema.

50. A computer-readable medium containing a program to add a document to a data store, comprising:

software to access a schema for the document;

software to locate a key value field in the document defined in the schema as a key;

5 software to load a value from the key value field;

software to store the value in the data store;

software to store the document in the data store; and

software to index the document in the data store using the value.

10 51. A computer-readable medium according to claim 50, wherein the software to identify a key value field includes:

software to locate an element defined in the schema as the key; and

software to select an element value field for the element as the key value field.

15 52. A computer-readable medium according to claim 50, wherein the software to identify a key value field includes:

software to locate a first attribute of an element defined in the schema as the key; and

software to select an attribute value field for the first attribute as the key value field.

20 53. A computer-readable medium according to claim 50, wherein the software to store the document includes:

software to parse the document into objects according to the schema;

software to load values for each object in the document; and

software to store the values in the data store.

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54. A computer-readable medium according to claim 50, wherein:

the document is an eXtensible Markup Language (XML) document; and

the schema is an XML schema.

30 55. A computer-readable medium containing a program to define a data store, comprising:

software to access a schema;

software to locate an object defined in the schema as a key;

software to define a first data structure in the data store for the object;



software to identify the first data structure in the data store as a key data structure; and  
software to define a second data structure in the data store for a document conforming  
to the schema.

5           56.     A computer-readable medium according to claim 55, wherein the software to  
define a second data structure includes:

software to parse the schema into objects; and  
software to define a data structure in the data store for each object.

10           57.     A computer-readable medium according to claim 55, wherein:  
the document is an eXtensible Markup Language (XML) document; and  
the schema is an XML schema.

            58.     A computer-readable medium containing a program to define a schema,  
15 comprising:  
software to define a first element in the schema, the first element including an element  
value field; and  
software to identify a key value field in the schema to be used as a key in a data store.

20           59.     A computer-readable medium according to claim 58, wherein:  
the software to define a first element includes software to assign a property to the first  
element as the key; and  
the software to identify a key value field includes software to identify the element  
value field as the key value field.

25           60.     A computer-readable medium according to claim 58, wherein:  
the software to define a first element includes software to define a first attribute of the  
first element, the first attribute identifying the first element as the key; and  
the software to identify a key value field includes software to identify the element  
30 value field as the key value field.

            61.     A computer-readable medium according to claim 58, wherein the software to  
define a first element includes software to define a second attribute for the first element, the  
second attribute including an attribute value field.

62. A computer-readable medium according to claim 61, wherein:  
the software to define a second attribute includes software to assign a property to the  
second attribute as the key; and

5 the software to identify a key value field includes software to identify the attribute  
value field as the key value field.

63. A computer-readable medium according to claim 61, wherein:  
the software to define a second attribute includes software to define a third attribute of  
10 the first element, the third attribute identifying the second attribute as the key; and  
the software to identify a key value field includes software to identify the attribute  
value field of the second attribute as the key value field.

64. A computer-readable medium according to claim 58, wherein the schema is an  
15 eXtensible Markup Language (XML) schema.